

CLAIMS

1. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated; and a conductive metal layer disposed on one side of the radioactive layer of the radioactive means so as to be interposed between the radioactive layer of the radioactive means and the material to be activated;

wherein the conductive metal layer is a metal film formed on a surface of a layered support structure.

2. The material activating device according to claim 1, wherein the layered support structure is a polymer film.

3. The material activating device according to claim 2, wherein the metal film is formed on the polymer film by vacuum evaporation.

4. The material activating device according to claim 2, wherein the metal film is formed on the polymer film by sputtering.

5. The material activating device according to claim 2, wherein the metal film is formed on the polymer film by electroplating.

6. The material activating device according to claim 1, wherein the metal film is a conductive metal foil.

7. The material activating device according to claim 6, wherein the layered support structure is a paper sheet and the conductive metal foil is attached to a surface of the paper sheet.

8. The material activating device according to any one of claims 1 to 7, wherein the metal film is formed on one of two opposite surfaces of the layered support structure, and the radioactive layer of the radioactive means is formed on the other surface of the layered support structure by printing.

9. The material activating device according to any one of claims 1 to 7, wherein the radioactive layer of the radioactive means is formed on a surface of the metal film by printing.

10. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated; and conductive metal layers disposed on one side of the radioactive layer of the radioactive means so as to be

interposed between the radioactive layer of the radioactive means and the material to be activated;

wherein the conductive metal layers and insulating layers of an electrically insulating material are superposed alternately.

11. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated; and a conductive metal layer disposed on one side of the radioactive layer of the radioactive means so as to be interposed between the radioactive layer of the radioactive means and the material to be activated;

wherein a graphite layer is formed in close contact with a surface of the conductive metal layer so as to be interposed between the conductive metal layer and the radioactive layer of the radioactive means.

12. The material activating device according to claim 11 further comprising a conductive metal layer interposed between the graphite layer and the radioactive layer of the radioactive means.

13. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated; and a conductive metal layer disposed on one side of the radioactive layer of the radioactive means so as to be interposed between the radioactive layer of the radioactive means and the material to be activated;

wherein the conductive metal layer is formed by holding conductive metal particles or fibers by a holding means.

14. The material activating device according to claim 13, wherein the holding means is a polymer layer containing the conductive metal particles or fibers dispersed therein.

15. The material activating device according to claim 13, wherein the holding means is a fiber structure containing the conductive metal particles or fibers dispersed therein.

16. The material activating device according to claim 13, wherein the holding means is a woven fiber structure containing conductive metal fibers.

17. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated, and a conductive metal layer disposed on one

side of the radioactive layer of the radioactive means so as to be interposed between the radioactive layer of the radioactive means and the material to be activated;

wherein the conductive metal layer is the wall of a hollow casing of a conductive metal, and

the radioactive layer of the radioactive means is disposed inside the casing.

18. The material activating device according to claim 17, wherein the casing is a tubular member having a rectangular cross section.

19. The material activating device according to claim 17, wherein the casing is a tubular member having a circular cross section.

20. The material activating device according to claim 17, wherein at least a part of the casing is formed in a conical shape and the part having the conical shape has an apex.

21. The material activating device according to claim 17, wherein the casing is a circular cylinder of a conductive metal which is flattened after inserting the radioactive layer of the radioactive means in the casing to hold the radioactive layer of the radioactive means therein.

22. The material activating device according to any one of claims 17 to 20 further comprising a base member made of a conductive metal, closely attached to the casing and designed so as to be attached to the material to be activated.

23. The material activating device according to claim 22, wherein the base member has a plurality of corners.

24. The material activating device according to claim 22, wherein the base member is formed by nesting a plurality of polygonal, annular members.

25. The material activating device according to claim 24, wherein the plurality of polygonal, annular members are made of different conductive metals, respectively.

26. A material activating device comprising:
 a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated; and
 conductive polymer layers disposed on one side of the radioactive layer of the radioactive means so as to be interposed

between the radioactive layer of the radioactive means and the material to be activated.

27. The material activating device according to claim 26, wherein surfaces of the conductive polymer layers are coated with conductive metal films, respectively.

28. The material activating device according to claim 26 or 27 further comprising a plurality of conductive polymer layers;

wherein the conductive polymer layers are superposed, and an insulating layer made of an electrically insulating material is interposed between the adjacent conductive polymer layers.

29. The material activating device according to any one of claims 26 to 28 further comprising a graphite layer interposed between the conductive polymer layer and the radioactive layer of the radioactive means in close contact with a surface of the conductive polymer layer.

30. The material activating device according to claim 29 further comprising a conductive polymer layer or a conductive metal film interposed between the graphite layer and the radioactive layer of the radioactive means.

31. The material activating device according to any one of claims 26 to 30, wherein the radioactive layer of the radioactive means is formed on a surface of the conductive polymer layer by printing.

32. The material activating device according to any one of claims 27 to 31, wherein the radioactive layer of the radioactive means is formed on a surface of the metal film by printing.

33. A material activating device comprising a radioactive means for emitting radioactive rays for irradiating a material to be activated to activate the material;

wherein the radioactive means includes radioactive mineral particles and conductive metal particles or fibers.

34. The material activating device according to claim 33, wherein the conductive metal particles or fibers are those of a heavy metal and those of a light metal.

35. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated to activate the material;

wherein the radioactive layer of the radioactive means contains

radioactive mineral particles, and graphite particles or fibers.

36. The material activating device according to any one of claims 33 to 35, wherein the radioactive layer of the radioactive means is a ceramic structure containing the particles or the fibers dispersed therein.

37. The material activating device according to any one of claims 33 to 36, wherein radioactive layer of the radioactive means is a polymer layer holding radioactive mineral particles and particles or fibers of a conductive metal or graphite.

38. The material activating device according to any one of claims 33 to 36, wherein the radioactive layer of the radioactive means is a fluid layer of a viscous fluid holding the radioactive mineral particles, and particles or fibers of a conductive metal or graphite.

39. The material activating device according to any one of claims 33 to 36, wherein the radioactive layer of the radioactive means is a support member holding the radioactive mineral particles, and particles or fibers of the conductive metal or graphite.

40. The material activating device according to any one of claims 33 to 39, wherein the radioactive layer of the radioactive means is inserted in a hole formed in an object of a material to be activated.

41. The material activating device according to any one of claims 33 to 39, wherein the radioactive layer of the radioactive means is attached to a surface of an object of a material to be activated.

42. The material activating device according to any one of claims 33 to 35, wherein the radioactive layer of the radioactive means is printed on a surface of an object of a material to be activated.

43. The material activating device according to any one of claims 33 to 42, wherein the object to be activated is a body of forming die.

44. The material activating device according to any one of claims 33 to 42, the object of the material to be activated is a main part of a machine tool.

45. The material activating device according to any one of claims 33 to 42, the object of the material to be activated is an industrial tool.

46. The material activating device according to any one of

claims 33 to 42, the object of the material to be activated is a terminal of a lead-acid battery.

47. The material activating device according to any one of claims 33 to 42, the object of the material to be activated is a secondary cable connected to a spark plug attached to an engine.

48. A material activating device comprising: a radioactive layer of a radioactive means that emits radioactive rays for irradiating a material to be activated; and a conductive metal layer disposed on one side of the radioactive layer of the radioactive means so as to be interposed between the radioactive layer of the radioactive means and the material;

wherein the radioactive layer of the radioactive means is formed on a surface of the conductive metal layer by printing.

49. The material activating device according to claim 48, wherein the conductive metal layer is a metal foil of a conductive metal.

50. The material activating device according to claim 49, wherein an attaching means for attaching the metal film to the material to be activated is attached to a surface opposite the surface on which the radioactive layer of the radioactive means is formed.

51. The material activating device according to any one of claims 8, 9, 31, 32, 42, 48, 49 and 50, wherein the radioactive layer of the radioactive means is formed in a predetermined pattern by printing.